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TITLE: BROADCASTING SYSTEM AND RECEIVING  
APPARATUS  
INVENTORS: Tadao YOSHIDA, Keiji KANOTA, Junichi  
YOKOTA, Toyomi FUJINO, Hajime YANO,  
Hiroaki OISHI

William S. Frommer  
Registration No. 25,506  
FROMMER LAWRENCE & HAUG LLP  
745 Fifth Avenue  
New York, New York 10151  
Tel. (212) 588-0800

## TITLE OF THE INVENTION

Broadcasting System and Receiving Apparatus

## BACKGROUND OF THE INVENTION

### Field of the Invention

The present invention relates to a broadcasting system for broadcasting digital contents such as a movie and music or the like and a receiving apparatus thereof.

### Prior Art

In recent years, the development of a digital television broadcast for broadcasting various programs such as a movie, music, a game and computer data or the like to many users through the medium of a cable, a satellite broadcast and a ground wave has been promoted.

Using such a digital television broadcast enables the user to purchase a program such as a movie, music, a game and computer data or the like through the medium of a recording medium such as an optical disk and a magnet tape or the like or to avoid the complication for obtaining the program since the need for renting the program is eliminated.

However, in this digital broadcasting system, a broadcast station selects the time and the content of the program to be put on the air alone, so that the user is not capable of selecting freely the time and the content of the program, which the user hopes for listening or viewing.

Therefore, in order to listen or view the program, which the user hopes for, it is necessary for the user to use a time shifting function and a library function or the like to be realized by a video tape recorder. However, even when the user utilizes the time shifting function and the library function, the user has to perform the operation for booking recording. Further, the user has to select the program, which he or she hopes for, among all programs to be put on the air. Accordingly, the operations to listen or view the program, which suits the user's taste, were very complicated and inconvenient.

#### BRIEF SUMMARY OF THE INVENTION

The present invention has been made taking the foregoing problems into consideration, an object of which is to provide a broadcasting system and a receiving apparatus, which are convenient for the user to listen or view the digital contents, which suits the user's taste.

In order to attain the above object, the broadcasting system according to the present invention comprises a broadcast station for broadcasting attributive information, in which digital contents and attribution thereof is shown, and digital contents; and a plurality of receiving apparatuses having receiving means for receiving said digital contents and said attributive information, which are put on the air from said broadcast station, recording medium for recording the received digital contents and the received attributive information, output means for outputting the received digital

contents, selecting means for comparing selective information showing a user's taste with the attributive information, which is provided to the digital contents to select the digital contents and controlling means for controlling to output the digital contents, which are selected by said selecting means, among the digital contents which are received by said receiving means, and the digital contents which are recorded in said recording medium or controlling to record the digital contents, which are selected by said selecting means, among the digital contents which are received by said receiving means.

This broadcasting system provides digital contents to be put on the air with the attributive information of the digital contents and selects the digital contents which suit the user's taste among the digital contents which were put on the air on the basis of the attributive information and the selecting information showing the user's taste. Then, according to this broadcasting system, the user listens and views the selected digital contents after recording it in the recording medium, or listens and views the digital contents which suit the user's taste among the recorded digital contents. Alternatively, this broadcasting system contributes to improving the convenience when the user listens and views or records the digital contents in real time by indicating information related to titles of a digital contents to be put on the air in real time and the attributive information thereof.

Alternatively, a receiving apparatus according to the present invention comprises receiving means for receiving the digital contents and the attributive

information showing the attribution of the digital contents from the broadcast station, recording medium for recording the received digital contents and the received attributive information, output means for outputting the received digital contents, selecting means for comparing selective information showing a user's taste with the attributive information, which is provided to the digital contents to select the digital contents and controlling means for controlling to output the digital contents, which are selected by said selecting means, among the digital contents which are received by said receiving means, and the digital contents which are recorded in said recording medium or controlling to record the digital contents, which are selected by said selecting means, among the digital contents which are received by said receiving means.

This receiving apparatus provides digital contents to be put on the air with an attributive information of the digital contents and selects the digital contents which suit the user's taste among the digital contents which were put on the air on the basis of the attributive information and the selecting information showing the user's taste. Then, according to this receiving apparatus, the user listens and views the selected digital contents after recording it in the recording medium, or listens and views digital contents which suit the user's taste among the recorded digital contents. Alternatively, this broadcasting system contributes to improving the convenience when the user listens and views or records the digital contents in real time by indicating information related to titles of a digital contents to be put on the air in real time and the attributive information thereof.

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The broadcasting system and the receiving apparatus according to the present invention provide digital contents to be put on the air with the attributive information of the digital contents and select the digital contents which suit the user's taste among the digital contents which were put on the air on the basis of the attributive information and the selecting information showing the user's taste. Then, according to the broadcasting system and the receiving apparatus according to the present invention, the user listens and views the selected digital contents after recording it in the recording medium, or listens and views the digital contents which suit the user's taste among the recorded digital contents.

Thus, the broadcasting system and the receiving apparatus according to the present invention automatically select the digital contents on the basis of the selecting information showing the user's taste, so that the complication upon selecting the digital contents, which the user hopes for, among many digital contents is eliminated and the convenience is improved. Alternatively, the broadcasting system and the receiving apparatus according to the present invention are capable of only recording the digital contents, which are necessary for performing the time shifting function, so that it becomes possible to use the recording medium efficiently.

Alternatively, the broadcasting system and the receiving apparatus according to the present invention display information related to titles of the digital contents to be put on the air in real time and the attributive information thereof, so that they contribute to a dialogue between themselves and the user. Therefore, the broadcasting

system and the receiving apparatus according to the present invention contribute to improving the convenience when the user listens and views or records the digital contents in real time.

#### BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

FIG. 1 shows a constitution of a digital broadcasting system according to an embodiment of the present invention;

FIG. 2 shows a constitution of a digital broadcasting system according to a fourth modified example, which is provided with removable media;

FIG. 3 is a view for explaining the exchange of the removable media between a user A and a user B in the digital broadcasting system according to the fourth modified example;

FIG. 4 shows a constitution of a digital broadcasting system according to a fifth modified example;

FIG. 5 shows a constitution of a digital broadcasting system according to a seventh modified example, which is provided with a remote controller having the removable media;

FIG. 6 is a view for explaining the exchange of the removable media between a user A and a user B in the digital broadcasting system according to the seventh modified example;

FIG. 7 is a view for explaining the remote controller for controlling remotely

a receiving apparatus, which is capable of being provided with the removable media;

FIG. 8 is a view for explaining the remote controller for controlling remotely the receiving apparatus, which displays the data related to a caption in a displaying portion thereof;

FIG. 9 is a view for explaining the EPG, which displays the program, which is capable of being listened and viewed and the program, which the user is not capable of listening and viewing at the present; and

FIG. 10 is a view for explaining an EPG, which displays the program, which was put on the air in the past.

## DETAILED DESCRIPTION OF THE INVENTION

As an embodiment of the present invention, a digital broadcasting system, to which the present invention is applied, will be explained with reference to the accompanying drawings below.

The digital broadcasting system according to an embodiment of the present invention will be explained with reference to FIG. 1.

A digital broadcasting system 1 according to an embodiment of the present invention is composed of a system having a broadcast station 2, a receiving apparatus 3, a monitor 4 to be connected to the receiving apparatus 3 and an outer storing device 5.

The receiving apparatus 3 is provided with an antenna 10, a tuner 11, a filter





the broadcast station 2 by, for example, the antenna 10 to demodulate the received signals and correct the errors or the like by the tuner 11. The digital data, which is demodulated or the like, is transmitted to the filter unit 12.

The filter unit 12 is provided with the digital data being comprised of a program and attributive information from the tuner 11 or the recording/reproducing unit 14. The selective information showing the user's taste is set in the filter unit 12. Comparing this selective information with the attributive information, which is included in each of the programs, the filter unit 12 filters the provided program and outputs only the program which suits the user's taste. This filter unit 12 is controlled by the controller 17 to be set ON or OFF so that the filter unit 12 is set to perform this filtering processing or not to perform this filtering processing. In the case that the filter unit 12 is set not to perform the filtering processing, the filter unit 12 outputs all inputted programs.

The cipher key unit 13 is provided with the digital data from the filter unit 12 and decrypts the digital data by using a predetermined cipher key. Only the user who is registered on the broadcast station 2, is capable of having this cipher key. The digital data, which is decrypted by the cipher key unit 13, is transferred to the recording/reproducing unit 14 or the decoder 16.

The recording/reproducing unit 14 reproduces recording of the digital data for the recording/reproducing medium 15. Normally, the digital data is provided as being encrypted and the recording/reproducing unit 14 records these digital data as being

encrypted in the recording/reproducing medium 15. Further, the recording/reproducing unit 14 may record the digital data, of which codes are decoded in the recording/reproducing medium 15, for example, when the accounting processing or the like has been already completed or the program is supplied free of charge.

Alternatively, the recording/reproducing unit 14 is controlled by the controller 17 to read out the digital data which are recorded in the recording/reproducing medium 15 and transmit them to the filter unit 12.

The decoder 16 is provided with the digital data, of which codes are decoded by the cipher key unit 13. The decoder 16 decodes the program, which is compressed in the MPEG-2 method, to obtain video data, audio data and computer data or the like of a base band. Then, the decoder 16 outputs the decoded program to the monitor 4 or the outer storing device 5 in response to control by the user.

The controller 17 totally controls each of the tuner 11, the filter unit 12, the cipher key unit 13, the recording/reproducing unit 14, the decoder 16, the user interface unit 18 and the modem 19 or the like.

The user interface unit 18 comprises an input device such as a key board and a mouse or the like and the control unit thereof. For example, the user interface unit 18 selects a GUI, which is displayed on the monitor 4, or sets out various devices through the monitor 4.

The modem 19 connects the receiving apparatus 3 to the broadcast station 2 and a predetermined managing station through a public circuit and uploads the data, which

are transmitted from the receiving apparatus 3, to this broadcast station 2 and the predetermined managing station.

The above described receiving apparatus 3 receives the program which is put on the air from the broadcast station 2. The receiving apparatus 3 receives the broadcast program by the antenna 10. At this time, the tuner 11 demodulates the received program and corrects the errors of the received program. In the case of listening and viewing the broadcast program in real time, after the filter unit 12 selects a program, the cipher key unit 13 decodes the code of the selected program. The program, of which the code is decoded, is transmitted to the decoder 16 and the decoder 16 decompresses this program, so that this program is displayed, for example, on the monitor 4. Alternatively, when the broadcast digital contents are time shifted to be listened and viewed, the received program is transmitted from the filter unit 12 to the recording/reproducing unit 14 to be recorded in the recording/reproducing medium 15. Then, the program is reproduced from the recording/reproducing medium 15 at the time when the user desires. After the filter unit 12 selects the program, the cipher key unit 13 decodes the code of this program. The program, of which the code is decoded, is transmitted to the decoder 16 and the decoder 16 decompresses this program, so that this program is displayed, for example, on the monitor 4.

The above described receiving apparatus 3 selects the received program by the filter unit 12 and only the program, which suits the user's taste, is recorded in the recording/reproducing medium 15. Alternatively, only the program, which suits the

user's taste, is outputted through the decoder 16 in real time and upon time shifting.

Specifically, the receiving apparatus 3 sets out the selective information in the filter unit 12. The filter unit 12 compares the attributive information, which is provided to the program, with the selective information, which is set in the inside of the filter unit 12 to only select the attributive information, which accords with the selective information. Then, the filter unit 12 selects the program, which is provided with the selected attributive information. The controller 17 sets out the filter unit 12 whether it should select the program or not. When the filter unit 12 is set to be ON, it performs the filtering operation of the program. When the filter unit 12 is set to be OFF, it does not perform the filtering operation of the program.

For example, if the filter unit 12 is set to be ON, the receiving apparatus 3 only stores the program, which is selected by this filter unit 12, in the recording/reproducing medium 15, in the case of listening and viewing the received program at other period of time, namely, in the case of listening and viewing this program by time shifting it. Therefore, since it is not necessary for this receiving apparatus 3 to store all broadcast programs, the receiving apparatus 3 is capable of using the capacity of the recording/reproducing medium 15. Alternatively, the receiving apparatus 3 is capable of storing only the program, which suits the user's taste without the operation of record booking. Therefore, the complication upon selecting the program, which the user hopes for, among all broadcast programs is eliminated.

For example, the receiving apparatus 3 stores all received programs in the

recording/reproducing medium 15 by setting the filter unit 12 to be OFF in the case of time shifting the received program. Then, upon reproducing the program, the filter unit 12 is set to be ON and the receiving apparatus 3 outputs only the program, which is selected by this filter unit 12 through the decoder 16.

Further, the digital contents to be put on the air include the EPG. On this account, the receiving apparatus 3 is capable of easily selecting the program in the case of listening and viewing the program in real time by displaying this EPG. The information related to the title, by which the user can understand the content of the program, is displayed on this EPG as an option. This EPG also comprises, for example, text data, font data, image data and graphic data or the like. According to need, the EPG may include animation data or the like.

Here, when the controller 17 displays the EPG, the receiving apparatus 3 changes the title of the program on this EPG to display it in conformity to the user's taste. For example, if there is a program, of which attributive information accords with the selective information set in the filter unit 12, the receiving apparatus 3 displays the title information showing the program with being different from other programs. The user selects the title information to be displayed on the EPG by using the user interface unit 18. Therefore, according to this receiving apparatus 3, the user is capable of easily selecting the information when listening and viewing the program on the broadcast in real time.

Alternatively, this EPG is capable of being used even when reproducing the

program after it is stored in the recording/reproducing medium 15. In other words, this EPG is stored in the recording/reproducing medium 15 together with the program, so that the program to be reproduced is capable of being selected by using this EPG even when the program is time shifted. Accordingly, when the program, of which attributive information accords with the selective information set in the filter unit 12, is stored in the recording/reproducing medium 15, the title information showing that program is displayed with being different from other programs. As a result, it becomes easy for the user to select the information on time shifting.

The selective information is set in the filter unit 12 by changing the content of the program from the option to a desirable setting content, which is prepared in advance on the GUI, on the starting point for using the apparatus or by setting a value of a parameter arbitrarily by the user. The selective information set in this filter unit 12 may be changed occasionally.

Alternatively, the selective information to be set in this filter unit 12 may switch the selective information on recording the program and on reproducing the program. For example, in the case of providing the selective information for all family members and recording the received program in the recording/reproducing medium 15, the selective information, in which a logical addition of a plurality of selective information is figured out, is set. Then, the program, to which the attributive information is provided, is only recorded. In this case, this attributive information accords with the selective information, in which a logical addition of a plurality of selective information

is figured out. In the case of reproducing the recorded program, the program which suits the user's taste is reproduced on the basis of one selective information, which is set for one user and the attributive information of the program, which is recorded in the recording/reproducing medium 15.

Alternatively, the controller 17 compiles the attributive information of the program, which the user listens and views from starting to use this apparatus on ward, and analysis, the taste of each user. The controller 17 changes weighting of a value of each parameter of the selective information, which is set in the filter unit 12, on the basis of the above analytical result to optimize it according to the user's taste.

The above described receiving apparatus 3 compares the selective information with the attributive information to use the program, which suits the user's taste. However, on the contrary to this, the above described receiving apparatus 3 may set the selective information, which is registered in the parameter and the user does not hope to listen and view, in the filter unit 12, so that the program, which the user does not hope to listen and view, may be excluded.

Accounting arise from listening and viewing the program is carried out when the code of the program is decoded by the cipher key unit 13 upon listening and viewing the program. If the code of the program is decoded, the accounting data is transmitted to the broadcast station 2 and the predetermined managing station through the modem 19. The broadcast station 2 and the predetermined managing station carry out accounting to each user on the basis of the transmitted accounting data.



Alternatively, in the case that the user downloads software or purchases the goods on a screen, the accounting data thereof are also transmitted to the broadcast station and the predetermined managing station.

The receiving apparatus 3 may transmit the selective information, which is set in the filter unit 12 or the analytic result obtained by analyzing the past results of listening and viewing, through the modem 19 to the broadcast station 2 and the predetermined managing station. In this case, the broadcast station 2 and the predetermined managing station are able to grasp the each user's taste and the past results of listening and viewing. Thus, grasping the user's taste and the past results of listening and viewing enables the program which more suits the user's taste to be put on the air. In other words, even when the programs are put on the air to the users who have various tastes, it is possible to economically realize the program constitution, which is the greatest common for each user. Further, it is possible to realize the program constitutions, which suit the tastes of few users, such as responding to a request of a specified program which few users desire earnestly.

Specifically, the content of the program may include the information of the commercial message. However, the receiving apparatus 3 may select the received information of the commercial message by using the attributive information that is provided to this commercial message information. The receiving apparatus 3 may set up a recording area dedicated for the commercial message in the recording/reproducing medium 15. Alternatively, the receiving apparatus 3 may select

the commercial message information which suits the user's taste and record it so that the commercial message information that is recorded in this dedicated recording area for the commercial message may be listened and viewed within a predetermined time frame of the commercial message in the program. Thus, suiting the content of the commercial message information the user's taste not only allows obtaining necessary information for the user, but also allows improving the value of the commercial message for the broadcaster.

As described above, according to the digital broadcast system 1 of the embodiment of the present invention, since the digital broadcast system 1 selects the program automatically on the basis of the selective information showing the user's taste, it becomes possible to avoid the complication for selecting the desired program among many programs and the convenience is improved. Alternatively, it is possible to only record the necessary programs upon time shifting, so that the recording medium is capable of being efficiently utilized. Since the digital broadcast system 1 displays the attributive information as well as the title information of the program to be put on the air in real time, so that the digital broadcast system 1 contributes to a dialogue between themselves and the user. Therefore, the broadcasting system 1 according to the present invention contributes to improving the convenience when the user listens and views or records the program in real time.

Next, a first to a eighth modified examples, in which the functions are provided to the above described digital broadcast system 1, will be explained below. Each of

the modified examples owns the same constitutions as that of the digital broadcast system 1 shown in FIG. 1 if not specifically shown in the drawing. Further, even if they are shown in the drawings, with respect to the same constitutional elements, the same reference numerals are provided in the drawing and the detailed explanation thereof is omitted.

[First modified example]

A first modified example comprises a digital broadcast system, which changes the accounting amount in response to the using environment such as varieties of the monitor 4 and the outer storing device 5, which the user employs.

According to the first modified example, the receiving apparatus 3 stores large amount of programs in the recording/reproducing medium 15 as being band compressed and coded and as being encrypted. Alternatively, the receiving apparatus 3 reads out only the program which is selected by the filter unit 12 from the recording/reproducing medium 15 and output it to the monitor 4.

A flag indicating the kinds, the size and the resolution of the display or the like are set on the monitor 4, which is connected to the receiving apparatus 3. A flag indicating the kinds of the outer storing device 5 is also set on the monitor 4. The monitor 4 and the outer storing device 5 transmit these flags to the controller 17 of the receiving apparatus 3. The controller 17 transmits these flags through the modem 19 to the broadcast station 2. The broadcast station 2 refers to these flags and judges the kinds of the monitor 4 and the outer storing device 5 which the user employs or the



the number of inch

4 : 3

16 : 9

An example of the outer storing device 5

DV, VHS, 8 mm, DVD, DVHS, â, a floppy disk, a memory card, MD and CDR

[Second modified example]

A second modified example comprises a digital broadcast system in which the broadcast station 2 changes the accounting amount in response to the amount of listening and viewing the commercial message by each user.

According to the second modified example, the receiving apparatus 3 stores large amount of programs in the recording/reproducing medium 15 as being band compressed and coded and as being encrypted. Alternatively, the receiving apparatus 3 reads out only the program which is selected by the filter unit 12 from the recording/reproducing medium 15 and output it to the monitor 4.

If the program to be put on the air comprises the commercial message, the broadcast station 2 provides a commercial flag as an additional information of the above commercial message and broadcasts that program. The receiving apparatus 3 detects the commercial flag when the cipher key unit 13 decodes the code and counts the number of these flags. Alternatively, the receiving apparatus 3 stores the

cumulative number for detecting the commercial flag to periodically transmit the information related this cumulative number through the modem 19 to the broadcast station 2. The broadcast station 2 refers to this cumulative numbers and changes the accounting amount for each user in response to the reference numbers of that commercial message. Specifically, the broadcast station 2 decrease the accounting amount to the user who listens and views large amount of the commercial message and increases the accounting amount to the user who does not listen and view the commercial message that much.

According to the above described modified example 2, the broadcast station 2 is capable of changing the accounting amount in response to the amount that the user listens and views the commercial message. Therefore, it is possible to carry out the accounting more appropriately.

[Third modified example]

A third modified example comprises a digital broadcast system in which the broadcast station 2 changes the accounting amount of the program in response to the numbers of request for the program by the user.

According to the third modified example, the receiving apparatus 3 stores large amount of programs in the recording/reproducing medium 15 as being band compressed and coded and as being encrypted. Alternatively, the receiving apparatus 3 reads out only the program which is selected by the filter unit 12 from the recording/reproducing medium 15 and output it to the monitor 4.



According to the fourth modified example, the receiving apparatus 3 stores large amount of programs in the recording/reproducing medium 15 as being band compressed and coded and as being encrypted. Alternatively, the receiving apparatus 3 reads out only the program which is selected by the filter unit 12 from the recording/reproducing medium 15 and output it to the monitor 4.

Further, according to the fourth modified example, as shown in FIG. 2, a removable media 21 such as a floppy disk or the like is connected to the controller 17. This removable media 21 is exchanged between a user A who uses a receiving apparatus 3A and a user B who uses a receiving apparatus 3B.

The user A who uses the receiving apparatus 3A stores an address information of a favorite program and the user's client ID to the broadcast station 2 in the removable media 21. The user A passes the removable media 21, in which the address information and the client ID are stored, to the user B who uses the receiving apparatus 3B. If the receiving apparatus 3B is provided with, for example, the recording/reproducing medium 15 having a large capacity of terabyte, the program which is introduced by the user A is recorded in this recording/reproducing medium 15 without the user B realizing. The user B installs the removable media 21, which is passed from the user A, to the receiving apparatus 3B. Then, the user B is capable of reproducing easily the introduced program on the basis of the address information, which is recorded in the receiving apparatus 3B. In the case of listening and viewing the program, requesting the broadcast station 2 through the modem 19 for the program



enables the user B to listen and view the program as the user B is provided with the cipher key. In this time, the broadcast station 2 also receives the client ID of the user A, who introduced the program, from the receiving apparatus 3B. The broadcast station 2 changes the accounting amount of the program together with the user who introduced this program and the user who was introduced the program. In this case, for example, the broadcast station 2 discounts the accounting amount.

According to the above described fourth modified example, a first user introduces the program to a second user. When the second user uses the program, the accounting amount of the program becomes variable, so that more appropriate accounting can be realized. Especially, when using the recording/reproducing medium 15 having a large capacity of terabyte, the number of the programs, which is capable of being recorded, extremely increases, so that, for example, searching the program to listen and view by using the EPG or the like is difficult for the user. Therefore, according to this fourth modified example, the second user provides the first user with the address information of the program, so that it is possible to efficiently use the information.

The address information of the program and the client ID information of the user who introduced the program may be exchanged not only through the removable media 21, but also through the modem 19 by using the public circuit.

[Fifth modified example]

A fifth modified example comprises a digital broadcast system which makes the

accounting amount of the program variable in the case that the user introduces the program to other user and the user who is introduced the program uses the program. The fifth modified example is different from the fourth example in exchanging the data itself. On the contrary, in the fourth example, the address information of the program data is exchanged.

According to the fifth modified example, the receiving apparatus 3 stores large amount of programs in the recording/reproducing medium 15 as being band compressed and coded and as being encrypted. Alternatively, the receiving apparatus 3 reads out only the program which is selected by the filter unit 12 from the recording/reproducing medium 15 and output it to the monitor 4.

Further, according to the fifth modified example, as shown in FIG. 4, a removable media 21 such as a floppy disk or the like is connected to the controller 17. This removable media 21 is exchanged between a user A who uses a receiving apparatus 3A and a user B who uses a receiving apparatus 3B.

The user A who uses the receiving apparatus 3A stores the data of a favorite program and the user's client ID to the broadcast station 2 in the removable media 21. The user A passes the removable media 21, in which the address information and the client ID are stored, to the user B who uses the receiving apparatus 3B. The user B installs the removable media 21, which is passed from the user A, to the receiving apparatus 3B and records the program data, which is recorded in the removable media 21, in the recording/reproducing medium 15. Therefore, the user B is capable of

reproducing easily the introduced program. In the case of listening and viewing the program, requesting the broadcast station 2 through the modem 19 for the program enables the user B to listen and view the program as the user B is provided with the cipher key. In this time, the broadcast station 2 also receives the client ID of the user A, who introduced the program, from the receiving apparatus 3B. The broadcast station 2 changes the accounting amount of the program together with the user who introduced this program and the user who was introduced the program. In this case, for example, the broadcast station 2 discounts the accounting amount.

According to the above described fifth modified example, a first user introduces the program to a second user. When the second user uses the program, the accounting amount of the program becomes variable, so that more appropriate accounting can be realized. Especially, when using the recording/reproducing medium 15 having a large capacity of terabyte, the number of the programs, which is capable of being recorded, extremely increases, so that, for example, searching the program to listen and view by using the EPG or the like is difficult for the user. Therefore, according to this fifth modified example, the second user immediately provides the first user with the address information of the program, so that it is possible to efficiently use the information.

The program data and the client ID information of the user who introduced the program may be exchanged not only through the removable media 21, but also through the modem 19 by using the public circuit.

[Sixth modified example]

A sixth modified example comprises a digital broadcast system, which updates the program to be stored in the receiving apparatus 3, for example, in unit of an hour.

According to the sixth modified example, the receiving apparatus 3 stores large amount of programs in the recording/reproducing medium 15 as being band compressed and coded and as being encrypted. Alternatively, the receiving apparatus 3 reads out only the program which is selected by the filter unit 12 from the recording/reproducing medium 15 and output it to the monitor 4.

The broadcast station 2 updates the program constitution, for example, in unit of a week to broadcast a new program. The mode for broadcasting is so called near-on-demand mode. The receiving apparatus 3 stores large amount of programs in the recording/reproducing medium 15 as being band compressed and coded and as being encrypted. Alternatively, the receiving apparatus 3 reads out only the program which is selected by the filter unit 12 from the recording/reproducing medium 15 and output it to the monitor 4.

The user is capable of being provided with a new program by the contracted broadcast station 2, for example, in unit of a week. Alternatively, the receiving apparatus 3 sets out so as to update the program into a new one in a unit of a week upon setting on default. However, when the user does not hope the update, the receiving apparatus 3 sets out an order that the user does not hope the update through the user interface 18 and leaves the program which is updated on last week as stored in the recording/reproducing medium 15. Further, the receiving apparatus 3 may

update the program partially. In this case, counting the number of the reproduced programs, the receiving apparatus 3 may limit the data amount to be updated in response to counting.

According to the sixth modified example, the program to be stored in the receiving apparatus 3 will be updated on a regular basis, for example, in a unit of a week. The update may be carried out not by the user's setting and it may be carried out partially in response to the listened and viewed program.

[Seventh modified example]

A seventh modified example comprises a digital broadcast system, which is provided with a remote controller for remotely controlling the receiving apparatus 3.

As shown in FIGS. 5 and 6, the receiving apparatus 3 is provided with a remote controller 22 for controlling the present receiving apparatus 3. The receiving apparatus 3 is provided with, for example, an infra-red radiation receiving unit 23 and the remote controller 22 is provided with, for example, an infra-red radiation emitting unit 24. The infra-red radiation emitting unit 24 transmits an infra-red radiation signal and the infra-red radiation receiving unit 23 receives the infra-red radiation, so that the remote controller 22 remotely controls the receiving apparatus 3.

Alternatively, this remote controller 22 has a removable media 25 such as a floppy disk and a memory card or the like and a removable media controlling unit 26 for controlling this removable media 25.

The receiving apparatus 3 stores large amount of programs in the

recording/reproducing medium 15 as being band compressed and coded and as being encrypted. Alternatively, the receiving apparatus 3 reads out only the program which is selected by the filter unit 12 from the recording/reproducing medium 15 and output it to the monitor 4.

The user A who uses the receiving apparatus 3A stores the address information of a favorite program and the user's client ID to the broadcast station 2 in the removable media 25, which is installed to a remote controller 22A. The user A passes the removable media 25, in which the address information and the client ID are stored, to the user B who uses the receiving apparatus 3B. The user B installs the removable media 25, which is passed from the user A, to a remote controller 22B. Therefore, the user B is capable of reproducing easily the introduced program on the basis of the address information, which is recorded in the removable media 25. In the case of listening and viewing the program, requesting the broadcast station 2 through the modem 19 for the program enables the user B to listen and view the program as the user B is provided with the cipher key. In this time, the broadcast station 2 also receives the client ID of the user A, who introduced the program, from the receiving apparatus 3B. The broadcast station 2 changes the accounting amount of the program together with the user who introduced this program and the user who was introduced the program. In this case, for example, the broadcast station 2 discounts the accounting amount.

According to the above described seventh modified example, a first user







being listened and viewed from the program to be put on the air from now on by changing the color, the background, the font, the outer shape, the sound and the marking or the like of the display on the EPG or the like.

Alternatively, the receiving apparatus 3 provides the mode for displaying the program, which was put on the air in the past, as shown in FIG. 10, on the EPG. Then, the receiving apparatus 3 displays the program, which is recorded in the recording/reproducing medium 15 and is capable of being listened and viewed and the program which is not recorded in the recording/reproducing medium 15 and to be put on the air from now on with changing the kinds of display. For example, the receiving apparatus 3 enables the user to visually distinguish these two programs by changing the color, the background, the font, the outer shape, the sound and the marking or the like of the display on the EPG.